DIAGNOSTIC LABORATORY
College of Veterinary Medicine and Biomedical Sciences
Fort Collins, CO 80523

COLORADO STATE UNIVERSITY
TELE: 303/221-4630

D.L.No: 17132

Date: 1/4/85

Veterinarian: Jones
Address:

Owner: CDOW/Adrian
Species: Lion

Test	Animal I.D.	Results
Species identification		AGID - Positive identity with feline family. High Resolution Electrophoresis with Silver stain. Test bobcat, domestic cat, mountain lion, unknown + tiger. Migration pattern of sample shows positive identity to mountain lion. Non-identity to others.

Preliminary Report Date 2/4/85 By [signature]

Final Report Date _____ By [signature]

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Applied Technologies in
onservation Genetics
Dept. of Biology
Central Michigan University
Mt. Pleasant, MI 48859

989.774.3377
FAX 989.774.3462
brad.swanson@cmich.edu

Submitter: Pat Rusz

Agency:
Michigan Wildlife Habitat Foundation
6380 Drumheller Road,
PO Box 393,
Bath, MI 48808.
Phone: 517-641-7677 Fax: 517-641-7877

Examiner: Brad Swanson Ph.D.

Purpose: Determine species of origin from scat samples

Date: 5/13/04
Continued from report of 10/23/2002

Samples Received:

297 scat samples.

Examinations Conducted:

Three portions of each scat were removed from the samples and each portion was run through a DNA extraction procedure using Qiagen Stool Kits. The extracted DNA was quantified and a portion of the mitochondrial d-loop was amplified using the polymerase chain reaction (PCR) at the same time as known coyote (*Canis latrans*), wolf (*Canis lupis*), bobcat (*Lynx rufus*), and cougar (*Felis concolor*). Each of the three extractions were amplified in triplicate. Based on size separation of the amplified region in a 2% agarose gel (visualized with Sybr Stain Gold from Molecular Probes) the DNA was determined to be either canid or felid. All felid were subjected to restriction digestion using Rsa-1 which produces a unique banding in cougars and bobcats based on different restriction sites. Results of the restriction digests were visualized on a 4% agarose gel (visualized with Sybr Stain Gold from Molecular Probes). This procedure was carried out up to six (6) times per sample if amplification failed.

Results and Discussion:

Based on the mitochondrial d-loop analysis we have not identified any of your samples as canids. We have identified 11 samples to species 10 of which are cougars and one being a bobcat. The samples are identified by the location indicated on the sample container.

From: Lawrence Robinson
To: John Hendrickson, Tim Reis
Date: Wed, Jul 15, 1998 1:04 pm
Subject: Cougar sighting

This is a note I absolutely dread writing. I don't know if Glen talked to you yet, but I had the terrible misfortune of seeing the Alcona Co. cougar. On July 6, I was picking up the bear baits on routes in Alcona and Oscoda counties. It was pouring rain and I was soaked-ass wet and driving between bait sites. I was on a sandy, narrow USFS road when I came over a rise and a cougar was in the road about 60 yards away. It immediately bolted into the brush. I stopped and looked at the fresh tracks. They were in soft sand and were very clear impressions showing the cat had been walking on the road toward me until I appeared. It angled across the trail taking a couple bounds before leaving the road.

I did not have my camera in the truck to take pictures of the tracks. I drove to a gas station north of Comins and bought a little disposable Kodak camera. I returned to take pictures of the tracks and area. The camera only focused to 4' or more, but the pictures are good enough to show they are cat tracks. I used a folding knife and my boot track for a size reference in the photos.

I told Glen about it and how reluctant I was to say anything after dealing with Larry Lippert's cougar picture last year. I still get letters and calls about the "Alcona County Cougar". Last year I was hounded by most of the news reporters in the state, all the people who ever think they saw a cougar, most of the people who have seen U.F.O.'s, and several people who have reported Elvis is still alive. I have always been very skeptical about the cougar sightings we get from all over the state. So, you can understand why I wish this hadn't happened.

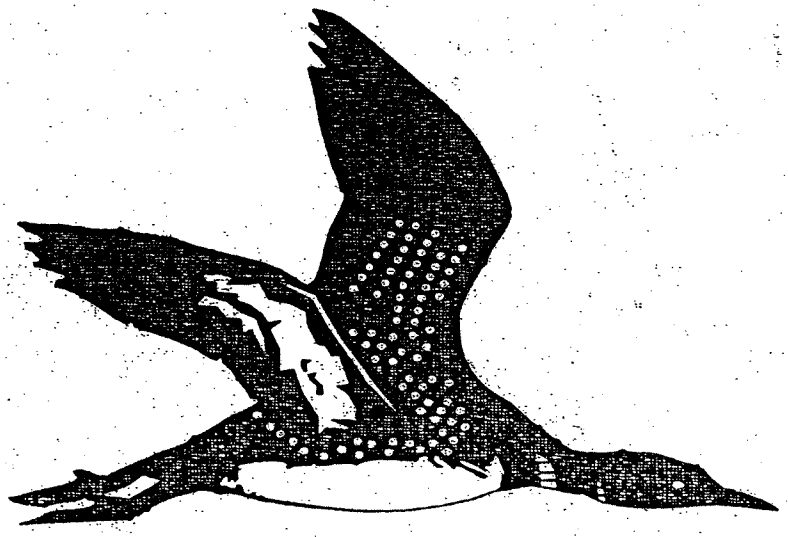
The location was between secs 31 and 32, T26N, R5E, Alcona County. It was on USFS 4435 about 3/10 mile south of USFS 4001. It was an adult animal and there were no other tracks around. I can't even give you a guess on weight, but the pictures show how deep the tracks were in comparison to my tracks.

figured I had to fess up eventually. What do I do to get the pictures and info to our division files without this etting out to the media? I really don't want this to turn into another media event like the picture last year did. Let ne know your suggestions.

y the way, the location is about 10 miles "as the cougar flies" from the Lippert property where the picture was ken last summer.

C: Glen Matthews

Endangered and Threatened Wildlife of Michigan



Edited by David C. Evers

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Acknowledgments

In December, 1983, Judy Soule (at the time zoologist with the Michigan Natural Features Inventory) helped me initiate a short publication with the Michigan Department of Natural Resources' Nongame Wildlife Fund. The goal was to develop brief accounts of Michigan's endangered and threatened animals. Thanks to cheerful encouragement and inspiration from Soule and the rest of the staff, the framework for this cause was established. Several subsequent grants from the Nongame Wildlife Fund kept this long-term project going.

Over the next ten years, this book became larger and more encompassing. More and more species were added as surveys further defined their actual status. The interdisciplinary scope of this work required the expert technical assistance of amateur and professional people. The accuracy of information for each species account was of foremost importance and, because of the dedicated efforts of over 80 people, the content has been thoroughly and tediously examined. Many of the people responsible for this behind-the-scenes research deserve high praise. A special thanks goes to Robert Hess and Thomas Weise for ensuring the final push for publication. Tom reviewed the final manuscript in its entirety.

Early drafts of the material on mammals were reviewed by Rollin Baker, Ralph Bailey, Chris Carmichael, James Cope, Dan Cristol, Robert Downing, Rich Earle, Jim Hammill, John Hendrickson, Allen Kurta, John Lerg, Jim Ludwig, Larry Master, Gail McPeek, David Mech, Jim Paruk, Rolf Peterson, John Stuht, Dick Thiel, Merlin Tuttle, and Mike Zuidema. The material on birds was first reviewed by Raymond Adams, Jr., Tom Allen, William Anderson, Don Beaver, Glenn Belyea, Michael Benuc, Tom Cade, Dan Cristol, Michael DeCapita, James Dinsmore, Bert Ebbers, Susan Haig, Jim Hammill, John Hendrickson, Bill Irvine, Marge Kolar, Anne Lambert, John Lerg, Jim Ludwig, Janea Little, Al Maley, Larry Master, Harold Mayfield, Judy McIntyre, Gail McPeek, T. J. Miller, Jim Paruk, Robert Payne, Greg Petersen, Ed Pike, Sergej Postupalsky, Harold Prince, Bob Pacific, Mary Rabe, Bill Robinson, Rick Sawicki, Bill Scharf, Bob Seppala, William Southern, Sylvia Taylor, John Urbain, Lawrence Walkinshaw, and Terry Wiens. The material on reptiles and amphibians was initially reviewed by Jim Harding, Max Hensley, and Mark Sellers, and the material on fish was reviewed by Tom Doyle, Carl Latta, Gerry Smith, and Tom Todd.

DNR employees

Extensive updates of the earlier drafts necessitated one final inspection. The following people generously contributed their time and expertise, and I am grateful for their efforts: Lowell Getz (least shrew and prairie vole), Merlin Tuttle (Indiana bat), Rolf Peterson (gray wolf), Bill Berg (cougar and lynx), Rich Earle (marten), Judy McIntyre (common loon), Cortez Austin (least bittern), Joe Johnson (trumpeter swan), Sergej Postupalsky (osprey, bald eagle, and red-shouldered hawk), Alan Poole (osprey), Dave Drummond (merlin), Pat Redig (peregrine falcon), Ted Bookhout (yellow rail), Brooke Meanley (king rail), Susan Haig (piping plover), Francesca Cuthbert (Caspian tern), Bill Scharf (common tern), Bruce Colvin (barn owl), Richard Clark (short-eared owl), Tom Carpenter (long-eared owl), Bonnie Brooks (loggerhead shrike), Paul Sykes, Jr. (yellow-throated warbler), Jerry Weinrich (Kirtland's warbler), Val Nolan (prairie warbler), John Zimmerman (lark sparrow), Jim Harding (reptiles and amphibians), and Dan Rice and Gerry Smith (fish).

Introductions discussing Michigan's landscape and each group of animals were written by authorities in the respective fields. Their acceptance of the task of providing a thorough,

deer was the primary prey base in the Great Lakes region. Cougars kill proportionally more old and young deer, thereby producing a healthier deer population and a dampening of prey oscillations (Hornocker 1970). Deer densities of ten or more individuals per square mile (2.6 square km) usually provide conditions suitable for winter survival of cougars, while less than five deer per square mile (2.6 square km) could jeopardize a cougar population's local survival or establishment. Although deer and other ungulates are primary food items, cougars prey on other mammals, such as the porcupine (*Erethizon dorsatum*) and snowshoe hare (*Lepus americanus*) (Robinette et al. 1959; Wright 1959; Spalding and Lesowski 1971).

Conservation/Management: According to the United States Fish and Wildlife Service Recovery Plan for the eastern cougar (Downing 1981a), recovery of the eastern subspecies will require at least three self-sustaining populations, each having at least 50 breeding adults, in its original U.S. range. While sightings are important indicators of mountain lion presence, observations of this secretive cat are independent of time spent outdoors (Van Dyke and Brocke 1987) and cannot measure population size. For example, western mountain lion hunters average only one sighting per nine years or every 2,000 days afield. Systematic surveys such as scent stations and intensive road surveys are needed to evaluate Michigan's cougar numbers and distribution. For every 310 square miles (806 square km), no more than 224 linear miles (360 km) need to be searched for cougar confirmation: 56 linear miles (90 km) suffice in ideal tracking conditions (Van Dyke et al. 1986a).

The existence of the cougar in Michigan has only been recently confirmed. Whether individuals are from small, remnant populations that survived human pressures through the last two centuries, transients from the western Great Lakes region, or privately released (or escaped) western subspecies, the cougar needs to be recognized, protected, and studied in Michigan's Upper Peninsula.

Literature Cited

Baker, R. H. 1983. *Michigan Mammals.* Mich. State Univ. Press, E. Lansing.

Berg, W. E. 1984. Mountain lions in Minnesota? *Minn. Volunteer* 47:1–7.

Culbertson, N. 1977. Status and history of the mountain lion in the Great Smokey Mountain National Park. *Natl. Park Serv., Mgmt. Rept.* 15.

Currier, M. J. 1983. Mammalian species: *Felis concolor. Am. Soc. Mamm., Mamm. Ser.* No. 200.

Dixon, K. R. 1982. Mountain lion. Pp. 711–27 *in* Chapman, J. A., and G. A. Feldhammer (eds.), *Wild mammals of North America: Biology, management, and economics.* Johns Hopkins Univ. Press, Baltimore.

Downing, R. L. 1981a. Eastern cougar recovery plan. *U.S. Fish Wildl. Serv.,* Clemson, SC.

Downing, R. L. 1981b. The current status of the cougar in the southern Appalachian. Pp. 142–51 *in* Proc. Nongame Endangered Wildl. Symp., Athens, GA.

Downing, R. L., and V. L. Fifield. 1985. Differences between tracks of dogs and cougars. Worcester Sci. Center, Worcester, MA, Unpubl. Rept.

Frome, M. 1979. Panthers wanted: Alive, back East where they belong. *Smithsonian* 10:82–88.

Gerson, H. B. 1988. Cougar, *Felis concolor,* sightings in Ontario. *Can. Field-Nat.* 102:419–24.

Hall, E. R. 1981. *The mammals of North America,* vol. 2. John Wiley and Sons, New York.